

II. EXPERIMENTAL

DOPPLER

DIRECTION

FINDER

WILLIAM E. DUMKE
WB5TCO

6/15/89

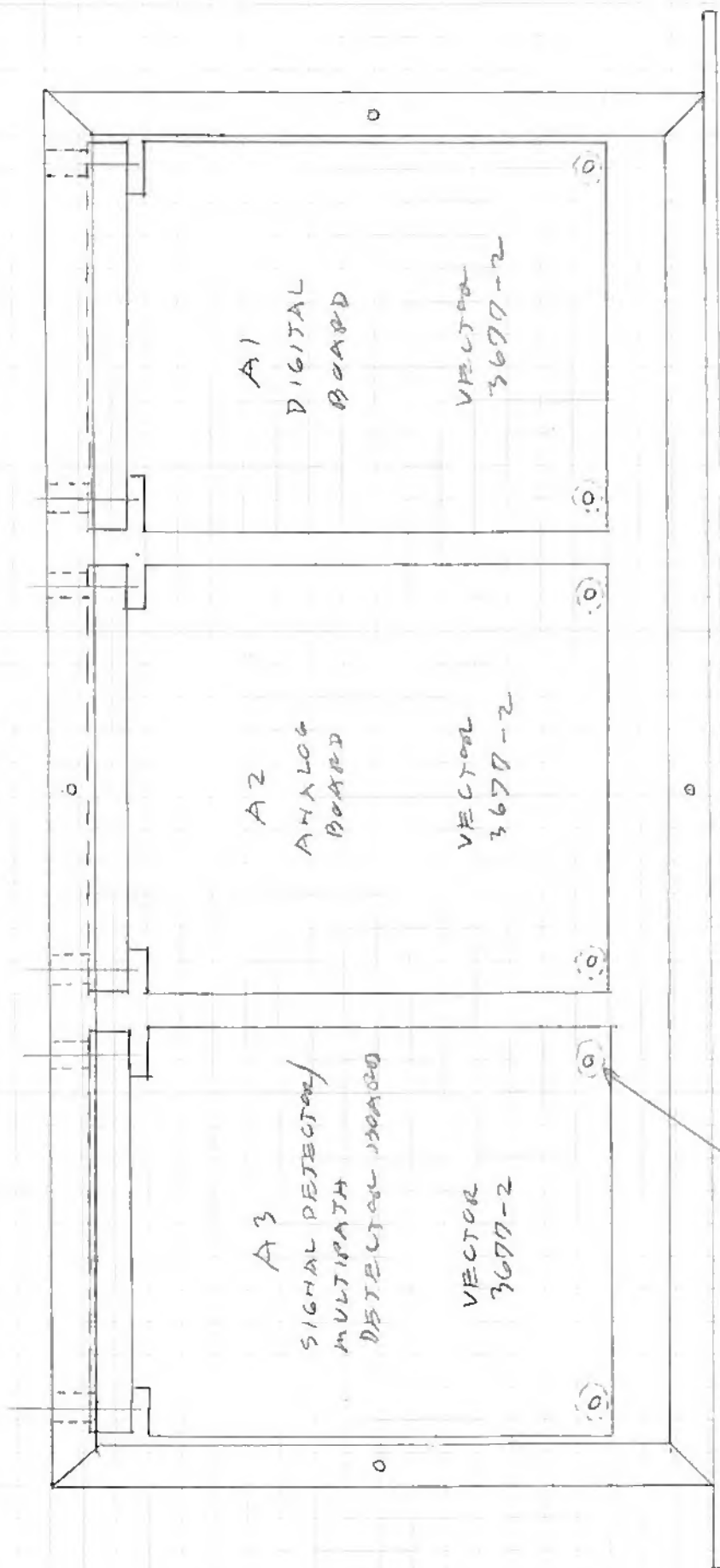
WILLIAM E. DUMKE
509 FIFTEENTH AVE.
GREEN BAY, WI 54303

Hand-drawn schematic of a control panel layout. The panel is rectangular with a width of 1.0" and a height of 1.25". The layout includes the following components and dimensions:

- Top Section:** A horizontal bar with a width of 1.25" and a height of 1.0". It contains a "POWERED" indicator (ON/OFF) and a "CLOCK" indicator (RUN/HAULT).
- Left Section:** A vertical bar with a width of 1.25" and a height of 1.0". It contains a "SOURCE" indicator (ON/OFF) and a "BWB" indicator (4Hz).
- Right Section:** A vertical bar with a width of 1.25" and a height of 1.0". It contains a "GAIN" indicator (CAL) and a "BEARING" indicator (CAL).
- Center Section:** A large rectangular area with a width of 1.25" and a height of 1.0". It contains a "MIN" indicator (4.5V) and a "MAX" indicator (4.5V).
- Bottom Section:** A horizontal bar with a width of 1.25" and a height of 1.0". It contains a "SIGNAL" indicator (ON/OFF) and a "MULTIPATH" indicator (ON/OFF).
- Dimensions:** The overall width of the panel is 1.0". The overall height is 1.25". The distance between the top and bottom sections is 1.25". The distance between the left and right sections is 1.25". The distance between the center and right sections is 1.25".

W.B.5 TCO 4/30/89

BUD CHASSIS BASE = 8" X 17" X 3" AC-412 ALUMINUM
WITH 8" X 17" BPA-1520 BOTTOM PLATE



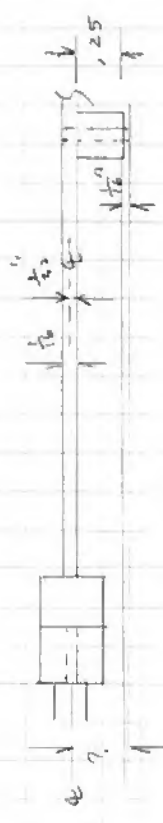
FRONT PANEL 3 1/2" X 19" RACK PANEL
BUD SURFACE SHIELD
SFA-1832

1/4" HIGH X 1/2" DIA
4-40 THD SPACER

TOP VIEW EXPERIMENTAL UNIT

W.C.D. WBS TCO 4/30/79

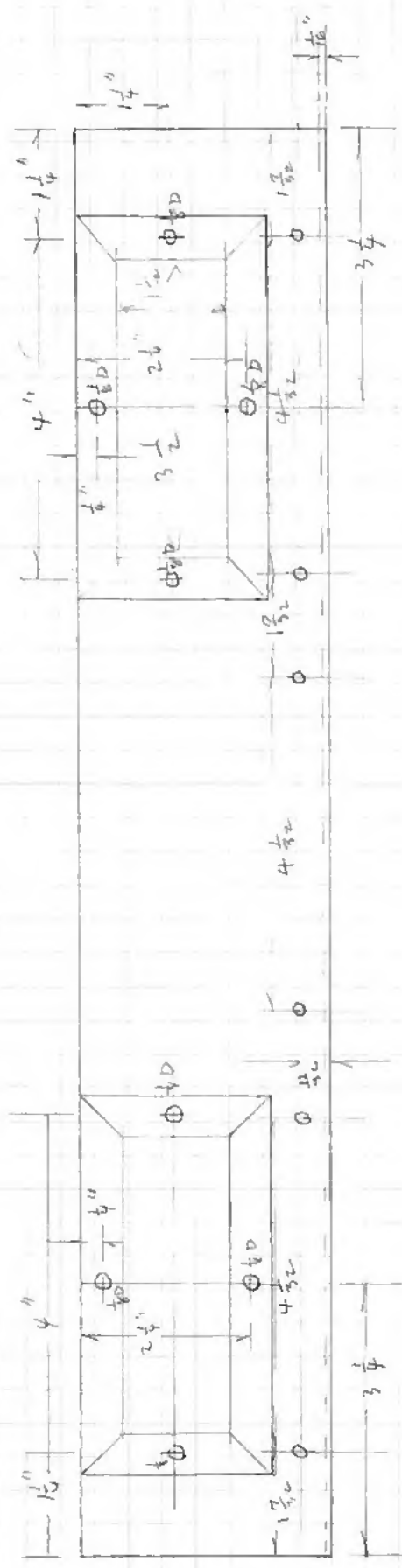
$$\begin{array}{r} 264 \\ + 170 \\ \hline 434 \end{array}$$



$$\begin{array}{r} 4 \frac{1}{32} \\ 4 \frac{1}{32} \\ 4 \frac{1}{32} \\ \hline 12 \frac{3}{32} \end{array}$$

$$17'' = 16'' \frac{32}{32} - 12 \frac{3}{32} = 4 \frac{29}{32}$$

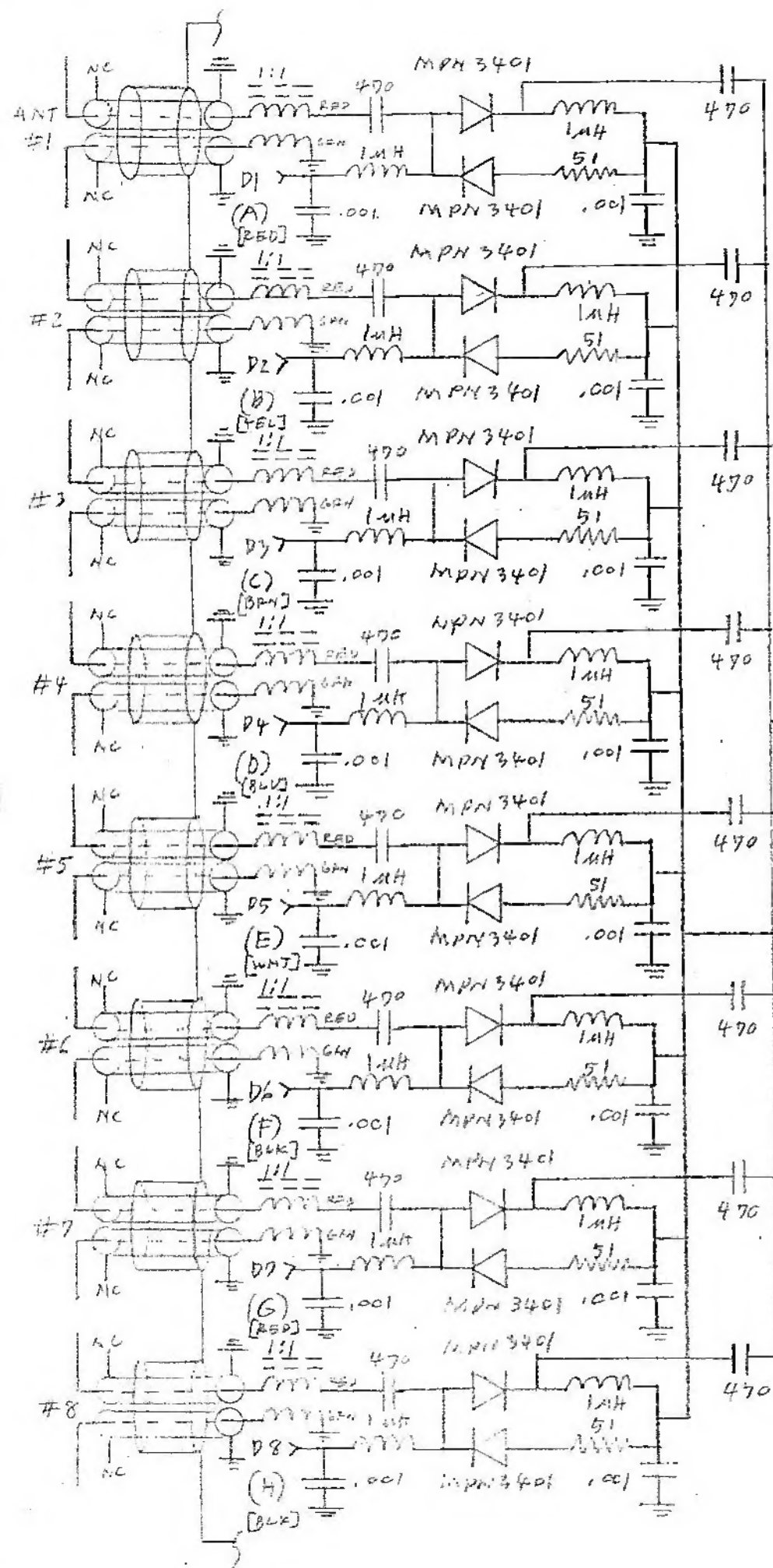
$$17'' = \frac{1}{32} + 25 + \frac{1}{16} = \frac{1}{32} + \frac{50}{32} + \frac{2}{32} = \frac{53}{32}$$



EXPERIMENTAL
REAR PANEL
LAYOUT
WITH FILTER
ON ASSEMBLIES

$$\begin{array}{r} 4 \frac{1}{32} \\ 4 \frac{1}{32} \\ 4 \frac{1}{32} \\ \hline 12 \frac{3}{32} \end{array}$$

William E. Dumke
 809 Hannah Place, NW
 Socorro, NM 87801



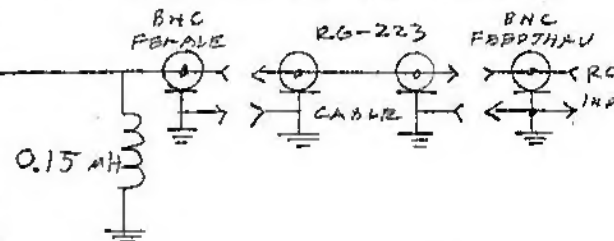
Walt - G. D.

12/3/78 WB5TCO

ANTENNA SWITCH

NOTES

1. (AMPHENOL CONN. PIN #5)
2. [WIRE COLOR CODES]
3. ADR HIGH = ON
4. 1:1 BALUNS WOUND WITH 9 TURNS ($\approx 3"$) OF MAGNE WIRE SUPPLY CO #B232221, BIFILAR WIRE (COLOR CODED RED AND GREEN) ON STACK #57-0184 5N CORE.

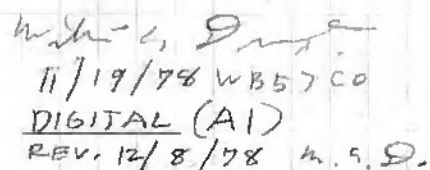


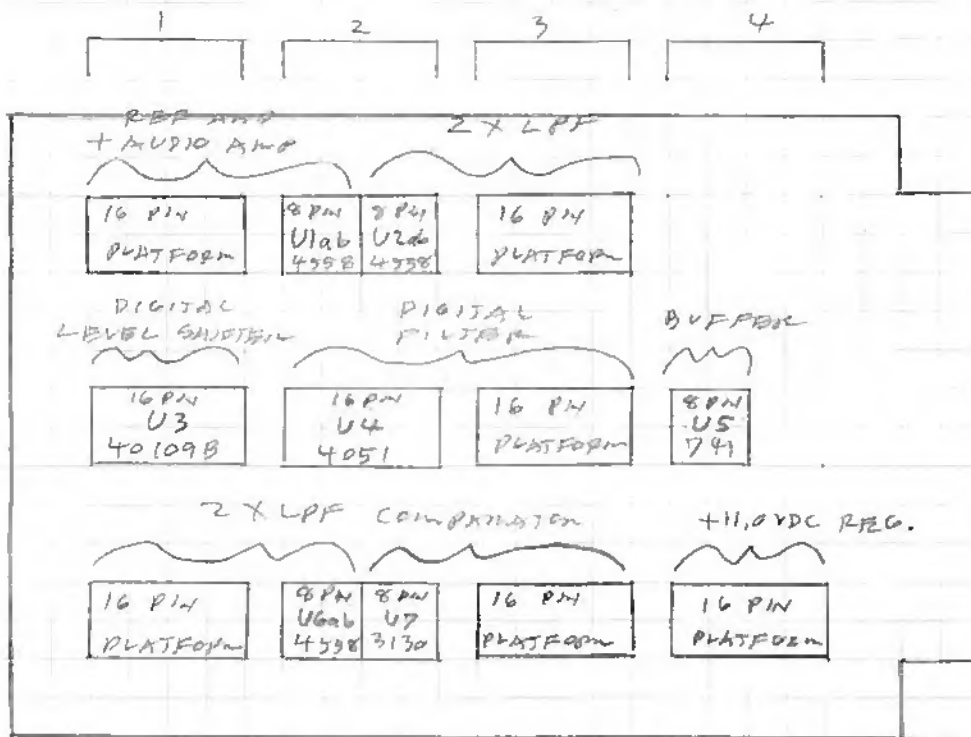
<+2.5VDC (I) [RED]

<GND (J) [BLK]

5. ANTENNA CABLES ALL RG-58A/U.
6. 1uH CHOKES PARALLEL RESONANT (≈ 243 MHz)
7. 0.15uH CHOKES PARALLEL RESONANT (≈ 243 MHz) WITH 7pF

REV. 4/24/79 G. D.





COMPONENT
SIDE VIEW

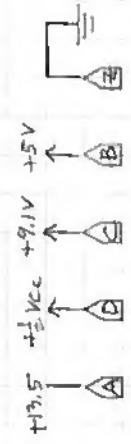
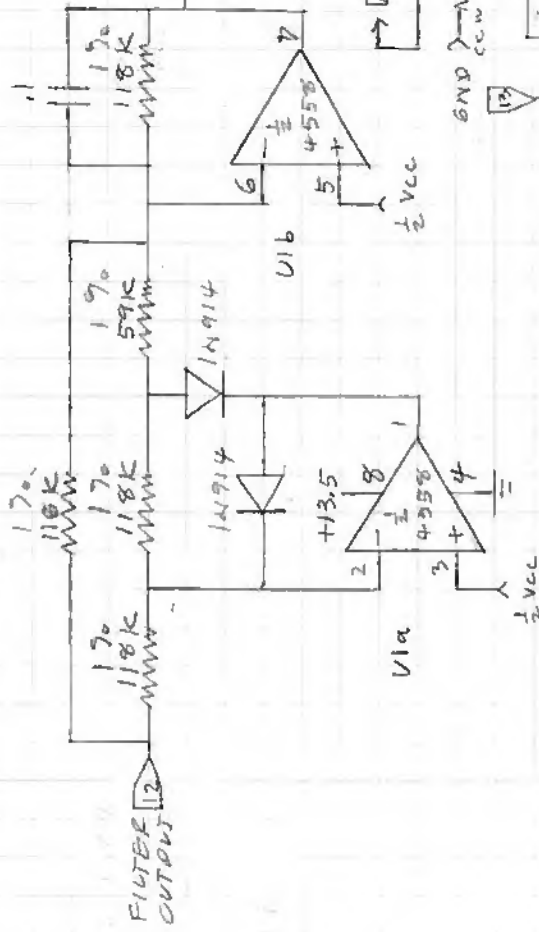
W. H. G. P.
11/19/78 WB5TCO
ANALOG BOARD
LAYOUT

REV. 5/2/79 W. H. G. P.

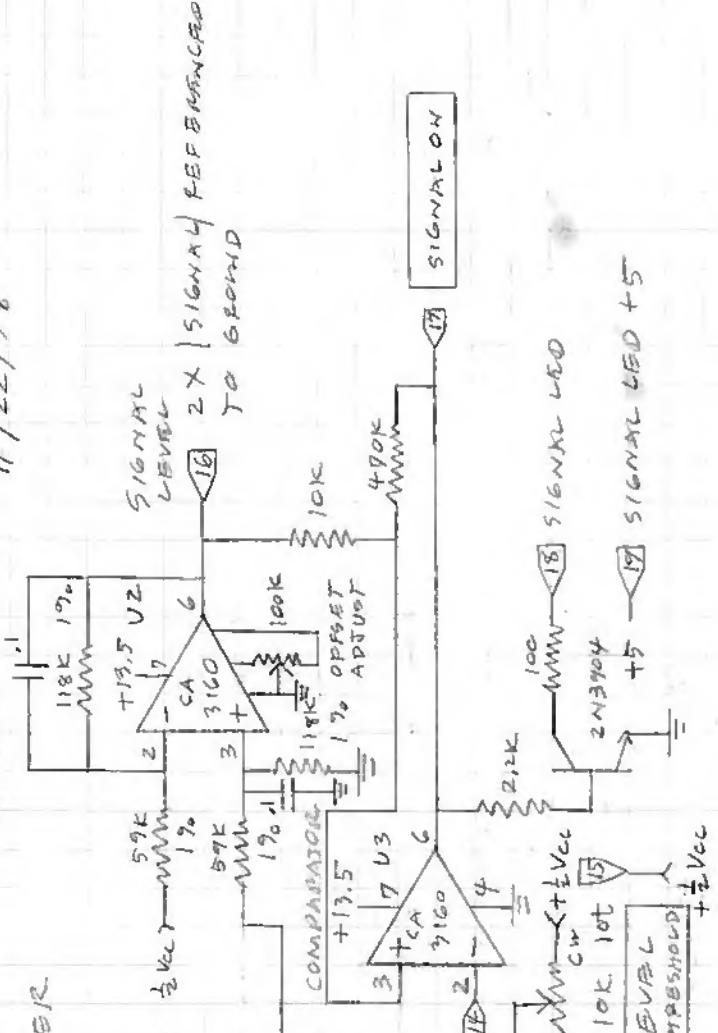
SIGNAL DETECTOR

1/2 (A3)

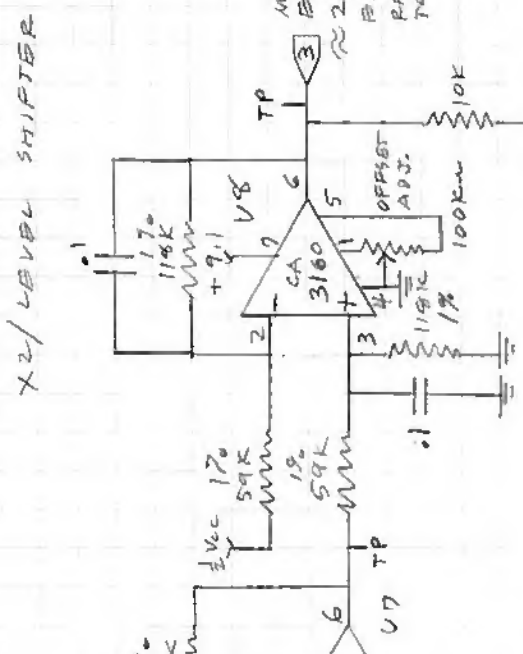
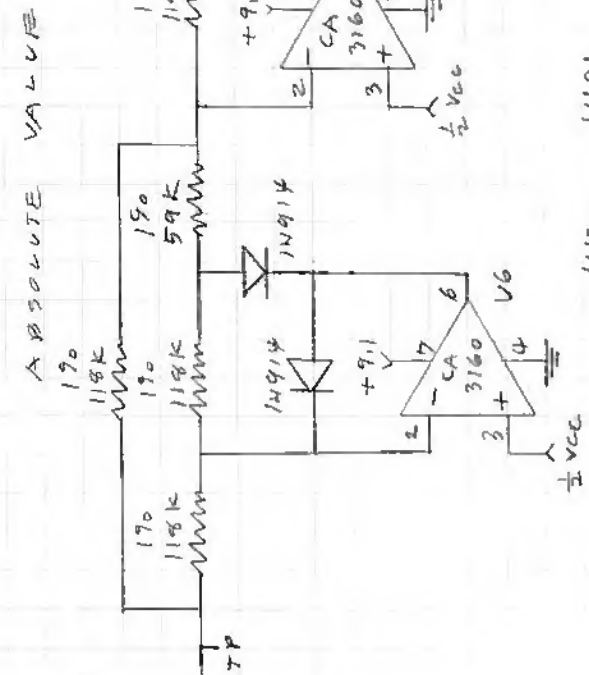
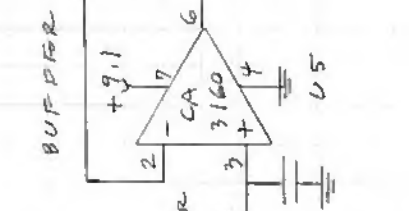
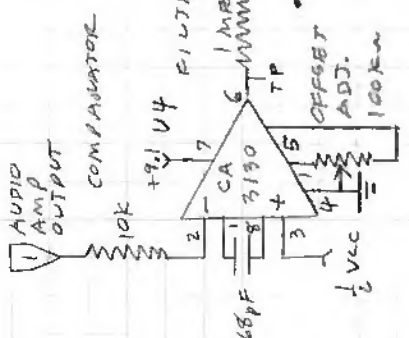
PRECISION FULL WAVE RECTIFIER/FILTER



X2 LEVEL SHIFTER



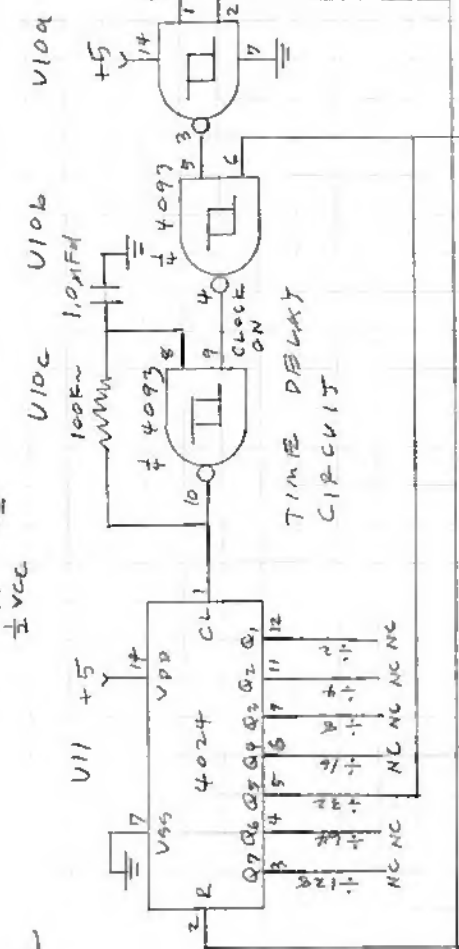
Wika-48
WAS TCO
11/22/78



MULTIPATH DETECTOR

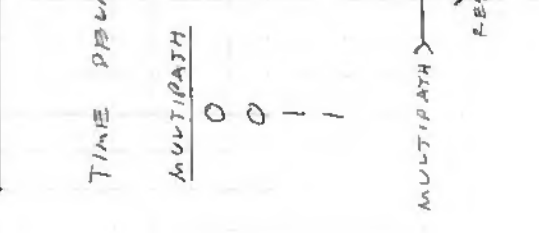
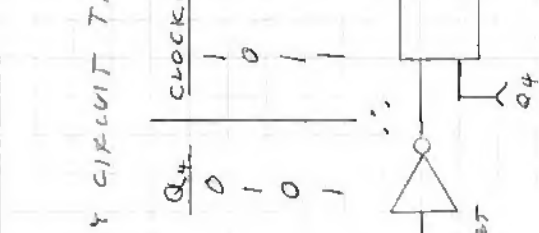
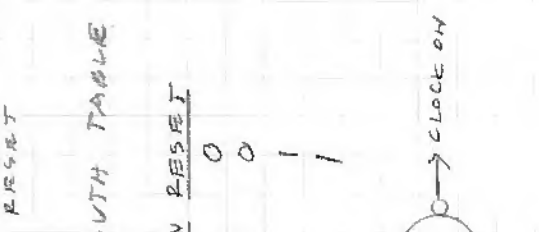
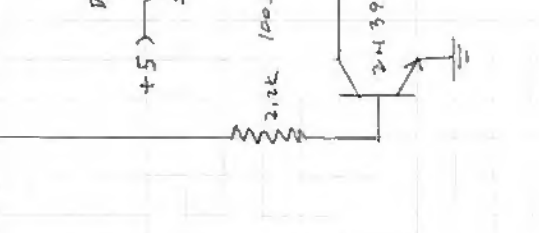
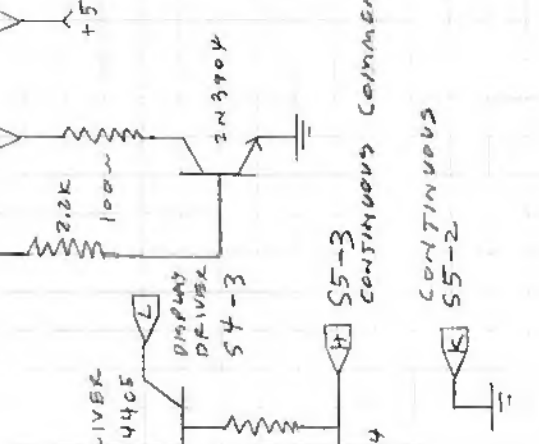
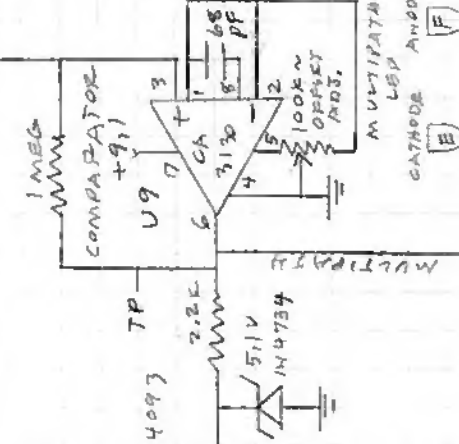
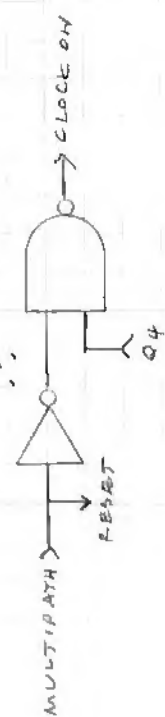
1/2(A3)

with S. D. D. A
WB5 TCO
11/22/78

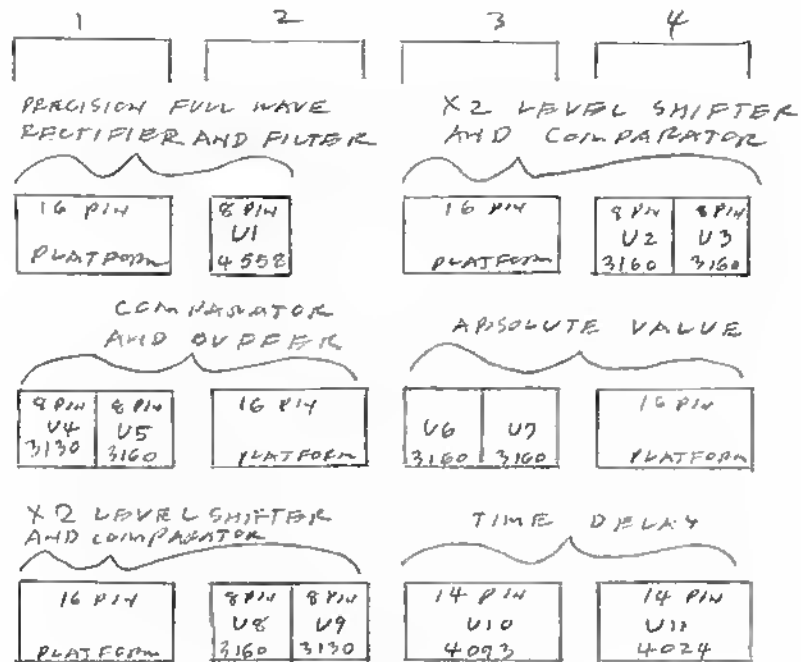


TIME DELAY CIRCUIT TRUTH TABLE

MULTIPATH	CLOCK ON	RESET
0	1	0
0	0	0
1	1	1
1	0	1



COMPONENT SIDE VIEW

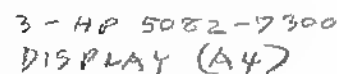
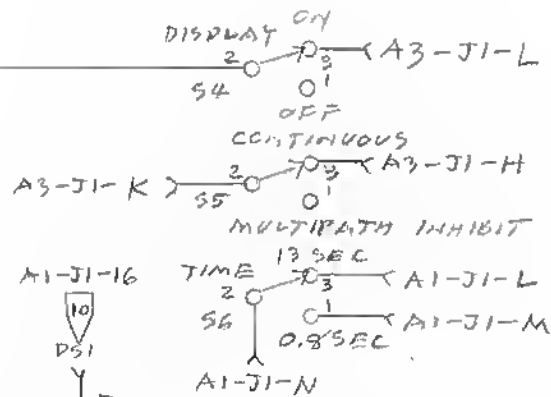
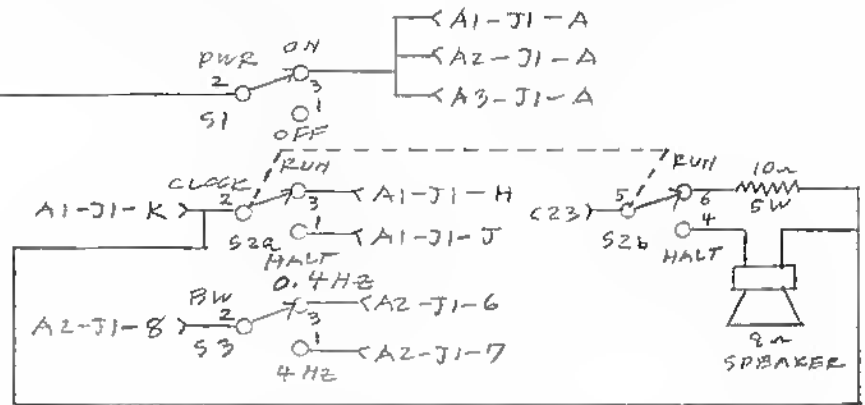


EDGE CONNECTED

SIGNAL DETECTOR/MULTIPATH DETECTOR
BOARD LAYOUT

W. S. D. Jr.
WBSTCO 11/18/78

m.g.d, WB5TCO
11/26/08

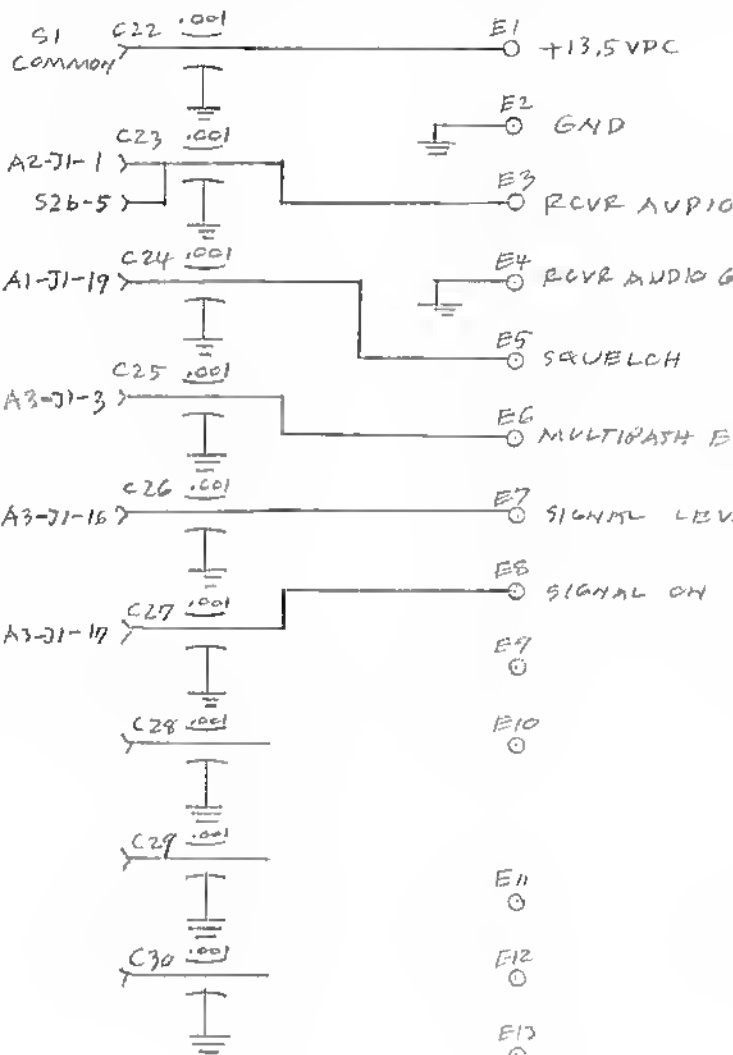


W. G. D. WB5TCO

11/26/78

REV. 12/8/78 G.S.D.

REAR PANEL FILTER ASSEMBLY



E10

E11

E12

E13

E14

E15

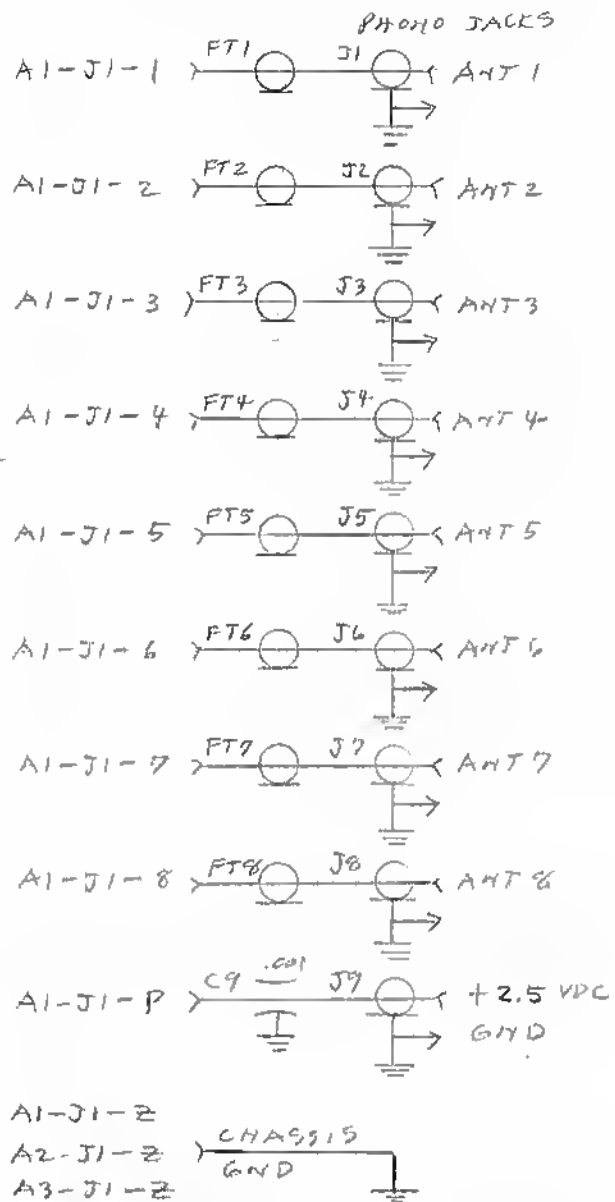
E16

E17

E18

E19

E20



A1-J1-2

A2-J1-2

A3-J1-2

COLOR CODE STANDARDS

K. G. D. WB5TCO
11/11/78
REV. 12/3/78 K. G. D.

BLACK	GROUND
RED	+13.8VDC, +9.1VDC, $\frac{1}{2}V_{CC}$ (ANALOG SUPPLIES)
YELLOW	+5V (DIGITAL SUPPLIES)
GREEN	DIGITAL (5VPP SWING)
BLUE	ANTENNA DIGITAL
WHITE	ANALOG

11/11/78

REV. 12/8/78 W.C.D.

ASSEMBLY A1 DIGITAL

PIN	NAME	SOURCE
1	D1	C1
2	D2	C2
3	D3	C3
4	D4	C4
5	D5	C5
6	D6	C6
7	D7	C7
8	D8	C8
9	A	A2-J1-9
10	B	A2-J1-10
11	C	A2-J1-11
12	Q0	A4-P1-8
13	Q1	A4-P1-1
14	Q2	A4-P1-2
15	Q3	A4-P1-3
16	D51	A4-P1-10
17	D52	A4-P1-9
18	D53	A4-P1-5
19	SQUELCH INPUT	C24
20	COMPARATOR INPUT	A2-J1-20
21	BEARING CAL CW/CENTER	R2 - CW/CENTER
22	BEARING CAL CCW	R2 - CCW
A	+13.5 INPUT	S1-3
B	+5 OUTPUT	A2-J1-B, A3-J1-B
C	+9.1 INPUT	A2-J1-C
D	$\frac{1}{2}$ VCC INPUT	A2-J1-D
E	SQUELCH LED	L1-CATHODE
F	LED +5	L1-ANODE
H	CLOCK RUN	S2-3
J	CLOCK HALT	S2-1
K	CLOCK COMMON	S2-2
L	TIME 13 SEC	S6-3
M	TIME 0.8 SEC	S6-1
N	TIME COMMON	S6-2
P	ANT +2.5 VDC	C9
R	N.C.	A2-J1-R
S	N.C.	A2-J1-S
T	N.C.	A2-J1-T
U		
V		
W		
X		
Y	DISPLAY GND	A4-P1-4
Z	GROUND	CHASSIS GND

11/10/78

REV. 12/8/78.

ASSEMBLY A2 ANALOG

PIN	NAME	SOURCE
1	RCVR AUDIO INPUT	C23
2	RCVR AUDIO GND	N.C.
3	GAIN CAL CCW	R1 - CCW
4	GAIN CAL CW/CENTER	R1 - CW/CENTER
5	AUDIO AMP OUTPUT	A3-J1-1
6	BW 0.4 Hz	S3-3
7	BW 4 Hz	S3-1
8	BW COMMON	S3-2
9	A	A1-J1-9
10	B	A1-J1-10
11	C	A1-J1-11
12	FILTER OUTPUT	A3-J1-12
13		
14		
15		
16		
17		
18		
19		
20	COMPARATOR OUTPUT	A1-J1-20
21		
22		
A	+13.5 INPUT	S1-3
B	+5 INPUT	A1-J1-B
C	+9.1 OUTPUT	A1-J1-C, A3-J1-C
D	$\frac{1}{2}$ VCC OUTPUT	A1-J1-D, A3-J1-D
E		
F		
H		
J		
K		
L		
M		
N		
P		
R	N.C.	A1-J1-R
S	N.C.	A1-J1-S
T	N.C.	A1-J1-T
U		
V		
W		
X		
Y		
Z	GROUND	CHASSIS GND

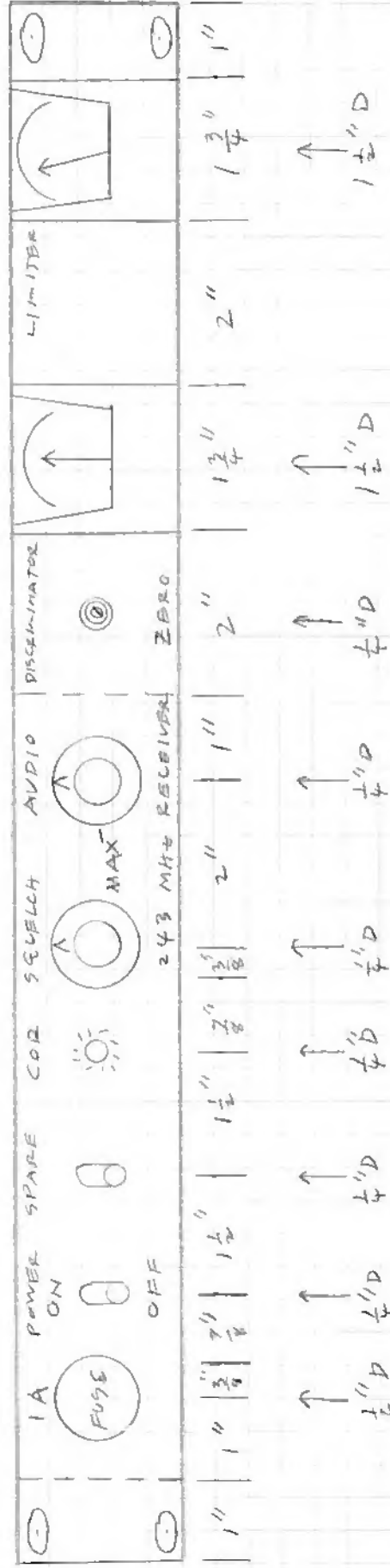
ASSEMBLY A3 SIGNAL DETECTOR/MULTIPATH DETECTOR

PIN	NAME	SOURCE
1	AUDIO AMP OUTPUT	A2-J1-5
2		
3	MULTIPATH ERROR	C25
4		
5		
6		
7		
8		
9		
10		
11		
12	FILTER OUTPUT	A2-J1-12
13	LEVEL THRESHOLD CCW	R3-CCW
14	LEVEL THRESHOLD CENTER	R3-CENTER
15	LEVEL THRESHOLD CW	R3-CW
16	SIGNAL LEVEL	C26
17	SIGNAL ON	C27
18	SIGNAL LED	L2-CATHODE
19	LED +5	L2-ANODE
20	ERROR THRESHOLD CW	R4-CW
21	ERROR THRESHOLD CENTER	R4-CENTER
22	ERROR THRESHOLD CCW	R4-CCW
A	+13.5 INPVT	S1-3
B	+5 INPVT	A1-J1-B
C	+9.1 INPVT	A2-J1-C
D	$\frac{1}{2}$ VCC INPVT	A2-J1-D
E	MULTIPATH LED	L3-CATHODE
F	LED +5	L3-ANODE
H	CONTINUOUS	S5-3
J		
K	CONTINUOUS (COMMON)	S5-2
L	DISPLAY DRIVER	S4-3
M		
N		
P		
R		
S		
T		
U		
V		
W		
X		
Y		
Z	GROUND	CHASSIS GND

ASSEMBLY A4 DISPLAY

PIN	NAME	SOURCE	COLOR
1	Q1	A1-J1-13	GRN
2	Q2	A1-J1-14	GRN
3	Q3 MSB	A1-J1-15	GRN
4	GND	A1-J1-1	BLK
5	DS3	A1-J1-18	GRN
6			
7	+5	S4-2	YEL
8	Q0 LSB	A1-J1-12	GRN
9	DS2	A1-J1-17	GRN
10	DS1	A1-J1-16	GRN
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
A			
B			
C			
D			
E			
F			
H			
J			
K			
L			
M			
N			
P			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			

1 1/2" X 5" X 9 1/2" CHASSIS BASE



243 MHz RECEIVER FRONT PANEL LAYOUT

W.C.D. WBS TCO 3/4/79 REV. 3/30/79

DOPPLER PLANTS

QUAN	DESCRIPTION	SOURCE	EACH	TOTAL
2	CINCH 251-22-30-160 EDGE CONN.			
1	236 KHz CRYSTAL			
2	VECTROL 3677-2 DP DIP PLUG BOARD	E.P.	9.86	
1	GRILL CLOTH			
1	10 TERMINAL BARRIERS STRIP			
8	STACKPOLE 57-0184 5N GALVN CONES			
1	MC 7805CK			
4	.001MFD FERRITORE CAPS			
1	14 PIN PLATFORM + COVER (A4)			
1	CHERRY THUMBWHEEL SWITCH			
1	24 PIN DIP SOCKET			
1	14 PIN DIP SOCKET			
1	DOPPLER PIN DIODE SWITCH (OLD ANT.)			
1	BIFILAR WIRE #B2322211 ^{MAGNET WIRE} SUPPLY CO.			
2	CD 4093BE RCA			
1	CD 4011AE NS			
1	SCL 4028BE SSS			
2	SCL 4522BE SSS			
1	4520PC F			
1	MC 14553CP			
1	CD 4030AE NS			
1	CD 4049CN NS			
1	CD 40109BE RCA			
1	CA 3130E			
1	CA 3160E			

REORDER PARTS

QUANTITY	DESCRIPTION	SOURCE	EACH	TOTAL
1	2N 3904			
9	SWITCHCRAFT JAX 3501FB PHONO JACK	E.P.	.50	4.50
2	AMPHENOL UG-291/U			
4	470pF DISC CAP			
1	.001 μ F DISC CAP			
2	$\frac{5}{8}$ " x $\frac{1}{4}$ " THD RD SPACERS			